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of iron requires a greater quantity of acid than the common sulphate.

The muriatic acid becomes very strongly oxygenated when dissolved in hyperoxygenated sulphate of iron, which thereby acquires a yellowish colour.

The hyperoxygenation of iron increases its affinity for acids in such a manner that calico printers make no use of an acetic solution of hyperoxygenated oxide of iron, as it does not readily give up its acid by drying.

*Account of the method of breeding fish used by Mr. Jacobi of Lippe county in Germany.*

*Hanover Mag. No. 3, and Phil. Mag. No. 34 p. 268.*

Mr. Jacobi's apparatus for breeding fish is a large water trough, about twelve feet long which is fixed in a place where there is a water fall from a spring, which was conveyed through a small gutter into the trough so as to cause a great water fall. Upon this trough is placed a cover like the lid of a box, with several holes in it of six inches square, which are filled up with a wire grating, not only to admit air, but so close as to prevent the water mice from passing through, which follow close to the fish at spawning time and are very fond of the spawn. At the lower end of this trough, about five inches above the bottom, is a hole filled up with the same kind of wire grating and of the same size as that at the top, through which the water runs into a fish pond or canal, by which means the water in the trough is always five inches deep. In the bottom of the trough a kind of coarse gravel is laid, about two inches thick, such as is commonly met with in gravelly ponds. December is the spawning time for Trout or Salmon, at that season if a female fish is taken and her belly gently pressed and rubbed, she will part very freely with her spawn, without any prejudice. The spawn is to be received in a bason of clear water; and the milt or soft roe of a male fish, procured in a similar manner, is to be stirred up well with it in the bason, which is to be carried to the trough before the water is let in; and the prepared spawn is then to be sprinkled very

thin upon the coarse gravel; the water from the spring is then to be let into the trough, and nothing more is necessary to be observed at that time, but that the water may have a constant current through the wires, and that these wires be kept clear from filth. on the third or fourth day after, the trough should be opened, to inspect whether the spawn is not covered with slime, or nastiness; in which case the water is to be moved horizontally with a flat hand, tolerably briskly; which motion will clear the spawn from the slime, and at the same time turn the eggs. It will have the same effect if the roe is cut out from a female fish and the milt from a male fish, and mixed together in water, as when they are procured in the manner mentioned.

In this manner Mr. Jacobi annually breeds vast quantities of trouts, he has observed that as soon as the fish is out of the egg, it has on its belly a bladder, from which it receives its first nourishment, and which becomes every day less until it vanishes at last; so long as the bladder appears he suffers the young ones to remain in the trough, afterwards he lets them out in the pond to seek food for themselves. He has proceeded in the same manner with Salmon, and with the same good success. He has observed that the young fish can be distinctly seen enclosed in the pregnant egg of a trout in its last stage.

The time of the spawning of fishes differs somewhat every year; partly owing to the influence of the weather, or to the beds in which they spawn; some require hard and stoney, others soft and slimy, and others bushy bottoms, and some herbs and grass. Trouts will not spawn but on a stoney and gravelly bottom, although some creep under the roots of trees, and in hollows near the shore where they are sometimes so entangled that they may be caught by the hand; they avoid spawning there, but will return again to find a place where the water has a fall and runs briskly, and where there is a gravelly bottom. After they have chosen a place they will beat violently into the gravel, or coarse sand, till they make a deep hole, and so deep that it is frequently

to be seen the next day, notwithstanding the running stream. This shows what difficulty the trouts have in spawning, as they of all small fishes have the largest eggs; their spawning time also continues longer, and they frequently begin in November and continue till February. Many who complain of their success in breeding trout have not sufficiently considered that they require a hard gravelly bottom and hard water; when both these are wanting they cannot spawn; and if they do it turns to no account, and the old ones die soon. If they appear near the head of the entrance, and the surface of the water, it is a sure sign that the water is too soft for them.

Perches have much greater advantage in spawning, and seem to have no difficulty; they spawn against bushes, shrubs, and reeds, where it adheres: and when they cannot find any thing of this kind, they get near shore, where grass grows sometimes under water, and drag their spawn along the grass; the male following the female immediately and impregnating the eggs. When the weather is not very cold or stormy, the eggs quicken in three days, those eggs which fall on sand or mud come to nothing. Their time of spawning is in the beginning of spring.

Carps and carouches spawn but once a year, which is in summer; they part with their spawn without much trouble, and in all places, but the spawn does not thrive every where. The places which are proper for their spawning are full of weed or fith, for they require a clay bottom: a small spot in a pond is sufficient to breed vast numbers: the spawning ponds are full of weeds, and require to be cleaned annually, and the number of the young ones to be lessened. Without this care the young fry grow poor, get thick heads, and on their scales a glutinous substance which is called *grief*; and when they grow up are distinguished by the name of *stone carps*, or *stone carouches*. A good economist will never suffer any of these sorts to remain in his ponds longer than three years; and in a midling pond seldom above twelve female and three or four male carps or carouches. When the stone

carps are put into the spawning ponds some tenches are put in along with them; and when the milt of the male tench is mixed with the spawn of the female carp, it produces what are called *Spiegel* carps. It is believed that a fish is produced from the mixture of carps and carouches, and these are called *hemelings*; but this sort is not fit for breed, and when caught are generally among the class of white fish.

Eels pass down streams and rivers in autumn in great numbers to spawn in the sea; and vastly greater numbers of young ones ascend them in spring and summer. Their size varies between the largest and smallest darning needle. They are called *elvers* and abound in some rivers to an inconceivable degree. Bushels of them are taken in some places with baskets fixed to the end of a pole and drawn swiftly through the water.

*Remarks....* The art of breeding fish from their spawn, which is but new in Europe and as yet unknown in our islands, has been practised for ages in China, where the spawn is sold commonly in the markets, and they are so attentive to make the most advantage of it, that even the rice fields which are flooded for two or three weeks, have spawn thrown over them at that time, for the sake of the young fry produced in that short period. The small trouble attending the management of fish in M Jacobi's method, in proportion to the advantage, induces us highly to recommend it to such of our readers as have proper situations for it; which in most parts of Ireland are very numerous, particularly in Ulster, and well adapted for breeding Trout or Salmon; ponds could be formed at a small expence on several parts of the streams, where many hundreds of fish may be produced every year.

Accounts of the breeding of bream and pike contained in the original paper have been omitted for brevity, as being less interesting, and that inserted of the eels has been taken from another article in the same work, as preferable to what was stated of them in the first.

Ponds for rearing Eels would also

be very profitable, they are in the water, what swine are on land, and may be fed and fattened with the same food. The ancient Romans were famous for their ponds of this sort for several reasons, some of which are not fit to state here, on account of their inhumanity. The same sort of ponds would do for carp and tench as for eels, but it is doubtful whether it would be safe to trust

them in the same water with them; perhaps herrings and other salt water fish, might be also reared in ponds communicating with the sea.

The short statement relative to breeding hybrid, or mule fish, deserves notice; perhaps some excellent varieties might be produced in this way; and no path in nature affords greater facilities for experiments of this nature.

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### DETACHED ANECDOTES.

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#### IMPROVEMENTS OF CONDITION GIVES IMPROVED IDEAS.

**Z**AMOISKOI, a Polish chief, enfranchised six villages on his estates. While the inhabitants were mere serfs in a state of servitude, he was occasionally obliged to pay fines for their misconduct, for in a state of drunkenness, they would attack and sometimes kill passengers: since their freedom he seldom received any complaints against them. Upon signing the deed of enfranchisement, their benevolent master intimated some apprehensions to the inhabitants, lest, encouraged by their freedom, they should fall into every species of licentiousness, and commit more disorders than when they were slaves.—The simplicity and good sense of their answer is remarkable. “When we had no other property,” returned they, “than the stick which we hold in our hands, we were destitute of all encouragement to a right conduct; and having nothing to lose, acted on all occasions in an inconsiderate manner; but as soon as our houses, our lands, and our cattle are our own, the fear of forfeiting them will be a constant restraint upon our actions.”

The situation of the Irish peasant, is certainly preferable to that of the Polish serf, and yet in many places, particularly in the grazing countries, it is miserable enough. If their condition were bettered by a more liberal treatment on the part of their employers, and by a wise system of legislation, they would acquire a more enlarged way of thinking and acting,

BELFAST MAG. NO. XVII.

and riot and disorder would most probably be changed into peaceable and industrious habits. Happy circumstances would result from making the experiment. K.

#### THE FOLLY OF ANTICIPATION.

The following dialogue took place about 40 years ago, between a father and his son, a little boy in the parish of Derriaghy, in the county of Antrim.

*Father*, I will plant an orchard in the field adjoining the house.

*Son*, I will eat apples then in abundance.

*Father*, If you eat without my leave, I will whip you.

*Son*, I will eat.

The father enraged, beat the boy, who still obstinately persisted in his declaration of eating the apples. The father is dead many years, the son in his turn is advancing in years, but the orchard is not yet planted. Similar events often occur in life, we suffer much by anticipation—The dreaded evils never occur, or are found more easily borne than we expected: Thus we often unnecessarily multiply our perplexities, and increase their force by anticipation. K.

#### VENERATION FOR THE CLERICAL OFFICE ILL REQUIRED

Ferdinand II. Emperor of Germany in the 17th century used to say, “Did it happen that an angel from heaven, and a clergyman were to meet him at the same time and place, the clergyman should receive his first, and the angel the second act of his obeisance”—“Nothing on earth,” writes his confessor, “was more sacred in his eyes than the priesthood.” M in m